

Patent Claims

1. An arrangement for supplying electrical power to a field device (10) with a housing (11) for monitoring a technical process in a process installation, in which there are pipelines which carry process media, without the use of wires, which field device (10) has a wire-free communication interface (5), has at least one field device face (11a) facing the process and at least one field device face (11b, c, d) facing away from the process, and is equipped with a thermoelectric transducer (14) which has a transducer face (14b) facing the process and a transducer face (14c) facing away from the process, characterized in that the thermoelectric transducer (14) is arranged in or on the field device (10) outside the pipeline carrying the process media, such that the heat flow in the field device (10) between the field device face (11a) facing the process and the field device face (11b, c, d) facing away from the process and/or the heat flow through the thermoelectric transducer (14) between the transducer face (14b) facing the process and the transducer face (14c) facing away from the process is converted to electrical energy by the thermoelectric transducer (14).

2. The arrangement as claimed in claim 1, characterized in that the heat flow in the field device (10) between the field device face (11a) facing the process and the field device face (11b, c, d) facing away from the process, and/or the heat flow through the thermoelectric transducer (14) between the transducer face (14b) facing the process and the transducer face (14c) facing away from the process can be converted to electrical energy irrespective of the direction of the heat flow.

3. The arrangement as claimed in claim 1 or 2,

characterized in that the thermoelectric transducer (14) is connected to a heat sink (20) on the transducer face (14c) facing away from the process.

5 4. The arrangement as claimed in claim 3, characterized in that the thermoelectric transducer (14) is fitted entirely within the housing (11) and the heat sink (14) is fitted at least partially within the housing (11).

10

5. The arrangement as claimed in claim 3, characterized in that the field device (10) is equipped with an energy store (24) and an energy management system, which is integrated in the controller (22) or  
15 in the control, data acquisition and processing module (4).

6. A method for supplying electrical power to a field device (10) with a housing (11) for monitoring a  
20 technical process in a process installation, in which there are pipelines which carry process media, without the use of wires, which field device (10) has a wire-free communication interface (5), has at least one field device face (11a) facing the process and at least  
25 one field device face (11b, c, d) facing away from the process, and is equipped with a thermoelectric transducer (14) which has a transducer face (14b) facing the process and a transducer face (14c) facing away from the process, characterized in that the heat  
30 flow in the field device (10) between the field device face (11a) facing the process and the field device face (11b, c, d) facing away from the process and/or the heat flow through the thermoelectric transducer (14) between the transducer face (14b) facing the process  
35 and the transducer face (14c) facing away from the process is converted to electrical energy by the thermoelectric transducer (14).

7. The method as claimed in claim 6, characterized in that the heat flow in the field device (10) between the field device face (11a) facing the process and the field device face (11b, c, d) facing away from the process, and/or the heat flow through the thermoelectric transducer (14) between the transducer face (14b) facing the process and the transducer face (14c) facing away from the process is converted to electrical energy irrespective of the direction of the heat flow.

8. The method as claimed in claim 7, characterized in that a defined path for the heat flow in the field device (10) is created by means of a heat sink (20) which is fitted on the transducer face (14c) facing away from the process.

9. The method as claimed in claim 8, characterized in that the energy consumption of the field device (10) is minimized by means of an energy management system, with the energy management system being integrated in the controller (22) or in the control, data acquisition and processing module (4), and being connected via the wire-free communication interface (5) with a central control and/or service station.

10. The method as claimed in claim 9, characterized in that the energy consumption of the field device (10) is minimized as a function of the state of an energy store (24) which is arranged in the field device, and/or of the actual measurement variables and/or of their rate of change with time and/or of the instantaneous installation state, which is known to the central control and/or service station.